was originally designed to be placed percutaneously in the pulmonary position but has been modified for use as a mitral valve. A considerable advantage is that the valve can be dilated with a balloon catheter as the child grows. This has clearly been shown to be an alternative that should replace the prior use of small-valved conduits that were designed for use as right ventricle to pulmonary artery conduits but then adapted to be placed in the mitral position.

The closing forces on a mitral valve and the susceptibility to calcification appear to rapidly degrade porcine and pericardial valves. The use of these valves should probably be limited to patients who cannot tolerate anticoagulation therapy. Their longevity is quite similar to the Melody valve, but are only available in sizes where there is also a comparable sized mechanical valve.

There is still room for improvement in this arena. Technological advances should contribute to this—much as the adoption of the Melody valve to the small mitral annulus and the development of the 15-mm mechanical valve have contributed to our ability to offer more solutions to these critically ill children. Until then let's use this data to recommend the use of mechanical or Melody valves for infants and children requiring mitral valve replacement.

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Commentary: Mitral valve prosthesis in children: Is it the time to change our beliefs and practice?

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CENTRAL MESSAGE

Mitral valve replacement in children carries a high burden of reoperation, death, and adverse events. The perfect prosthesis currently does not exist, but valid alternative solutions are available.

Congenital mitral valve disease, either stenosis or regurgitation, is among the most challenging conditions to treat. Usually, the earlier in age a surgical operation is required, the more challenging it is, and less satisfactory are the results in the long term. Surgeons in this field are aware that replacement should be avoided as much as possible, also accepting not perfect repair but preserving native tissue. When mitral valve replacement is needed, prosthesis selection becomes among the essential factors to provide the best outcome possible. During the prosthesis selection process, some fixed factors play a crucial role in the decision, such as prosthesis size available in the market, duration, and anticoagulation. Emani and colleagues[1] described the use of the Melody valve (Melody Transcatheter Pulmonary Valve; Medtronic, Minneapolis, Minn) in mitral position 8 years ago. Now they report their experience of mitral valve replacement showing the good result of the Melody valve in the mitral position compared with other prostheses. Choi and colleagues,[2] in their retrospective single-center study,

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evaluated 190 patients who underwent 290 mitral valve replacement procedures in 20 years. They assessed outcomes such as survival, freedom from re-replacement among different valve types such as mechanical, porcine, bovine stented, and bovine jugular vein valve (Melody). Among the most important findings are the data on small size diameter valves (<19 mm), for which the ideal prosthesis does not exist. Choi and colleagues[2] reported in this study a median time to re-replacement after Melody of 3.7 years; significantly lower compared with the median time for mechanical valves (estimated at 7 years). But the Melody valve's mean diameter reported is about 14 mm, similar to the multicenter study report,[3] and the correct comparable mechanical valve should be the 15 mm diameter. The 15-mm mechanical valve showed a median time between 28 months and 3.5 years before re-replacement, which was mainly caused by the patient's outgrowth.

Should we change our practice? The answer is yes, but only for small patients younger than age 2 years[4] for whom we have to choose a valve <19 mm. For those small diameters, probably Melody should be preferred over mechanical mainly because it can be dilated or even treated with a valve-in-valve procedure.[5] The Melody valve may become the prosthesis of choice for small diameters because it offers the advantage of being expandable, allowing time without anticoagulation up to the age where a larger, mechanical valve may be implanted, thereby reducing the need for reoperation.[6]

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